

**ATYPICAL SELECTION OF OVIPOSITION SITE IN *ANAX PARTHENOPE* (SELYS)  
(ANISOPTERA: AESHNIDAE)**

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**Abstract** *A. parthenope*, which usually breeds at permanent waters, was observed ovipositing into the bottom of a dried up pond in Southern Italy. In ovipositing aeshnids 3 levels of relation to water are distinguished: (1) oviposition into floating vegetation of permanent waters, (2) oviposition into dry substrate at a short distance from water, (3) oviposition into dry substrate far from water.

**Observations**

ROBERT (1958) states that *Anax parthenope* (Sel.) breeds at lakes and oviposits in floating vegetation. Populations of this species that we have observed in central and southern Italy breed in lakes, ponds and in slowly running streams, and oviposit into a great variety of vegetation. Therefore we consider exceptional our observations on September 11, 1977, of a population ovipositing on the bottom of a dried up pool of 50 x 50 m, named Va vasca del Lago Salso, near Manfredonia (Puglia, Lecce). After a long period of dry weather the ground was cracked and consisted of blocks of about 30 cm height, separated by fissures of a few cm in width. Only a thin streamlet with somewhat muddier banks was flowing across the dry area, which is located very near to a canal full of water and vegetation. In 1976 the dry area was completely flooded.

At this locality the oviposition of *A. parthenope* could be observed about ten times. In no case did we notice the egg

deposition into the wet mud along the streamlet or into vegetation at the nearby canal. Tandems landed on the edge of a fissure, then stepped backwards down into the fissure, where the ground was somewhat softer and wetter. The female tested the substrate with the ovipositor and the male followed her, at first by stretching the abdomen and then by stepping backwards. Some tandems completely disappeared in the fissures while ovipositing.

**Discussion**

Adaptation of dragonfly larvae to the aquatic environment is strictly connected with the approach of mature adults to the water. Little is known about the stimuli involved in habitat selection, but the approach to a water body is possibly a reaction to reflections of light from the water surface (CORBET, 1962). The choice of a habitat suitable for the larvae must of course be in accordance with the mechanical and structural properties of the ovipositing apparatus. The orthopteroid type of ovipositor in aeshnids probably evolved towards the utilization of plant tissues as a substrate (SCHMIDT, 1975), and this is in accordance with the shape of the egg of some species (DEGRANGE, 1971, 1973). Endophytic oviposition of most aeshnids might confirm this hypothesis.

Nevertheless, ovipositor structure is not rigorously correlated with a certain substrate, and reflections from a water surface

do not really seem to be the proper stimulus in habitat selection in aeshnids, while this may be true for other families of the Anisoptera. Thus, *Aeshna cyanea* oviposits in the mud on the banks of ponds as well as in floating vegetation (ROBERT, 1958; DEGRANGE, 1973; UTZERI, FALCHETTI & CONSIGLIO, 1977); *A. affinis* may oviposit either in the mud near water (ROBERT, 1958) or in the hardened bottom of dried ponds (UTZERI, FALCHETTI & CONSIGLIO, 1977); *A. juncea* in Denmark (NEVILLE, 1959) and *Acanthagyna vesiculata* in Nigeria (GAMBLES, 1960) insert their eggs into the dry mud of astatic ponds, and *Anax panybeus* held in captivity tries to oviposit into filter paper (OBANA & INOUE, 1972).

It seems, therefore, that in the oviposition behaviour of aeshnids three levels of relation to water may be distinguished:

- (1) selection of water bodies, where eggs are inserted into floating vegetation,
- (2) a slight degree of independence from water, when oviposition is performed at a short distance from water,
- (3) total independence from water, when oviposition is performed into desiccated substrate far from water.

The latter behaviour, which can be found in isolated populations of species

usually breeding at permanent waters, may represent an adaptation to astatic environments. A certain degree of functional plasticity of the ovipositing apparatus coupled with behavioural flexibility when responding to the stimuli eliciting habitat selection, enables the population to survive through an occasionally unsuitable season. However, these considerations do not permit us to explain the above mentioned selection of a greatly atypical habitat, while an adequate one (i.e. the canal with water and vegetation) was located nearby.

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